

**A POPULARITY FUNCTION FOR
THE SPANISH GOVERNMENT, 1985-1996**

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1. DATA AND METHOD

We shall try to account for the popularity of the Socialist cabinet during its mandate from 1983 to the first quarter of 1996. We shall use quarterly data because some of the data we use (specifically, data on governmental popularity) are not issued on a monthly basis¹.

Our dependent variable -which will be used as an indicator of that popularity- will be the percentage of vote intention to the governmental Socialist Party. This variable is measured quarterly by the CIS (the governmental agency for public opinion studies), which leave us with more than fifty time points. For those infrequent quarters that offer more than one measurement point, we averaged them into a single quarterly value.

That figure is a percentage computed only over those who express a vote intention, thus excluding the undecided. We know that this is a questionable practice, since it assumes that the vote intention of the undecided is distributed like that of the whole sample. However, the alternative strategy (computing it over the whole sample) is also highly questionable, since an increase of undecidedness may appear as a decrease of government popularity -which is not necessarily so. Therefore, our choice is as arbitrary as any other is, but it shows an elegant advantage: it provides figures that look credible as percentages of vote.

We also admit that *vote intention* is not exactly the same as *popularity*. Some studies use more accurate indicators of popularity, such as the percentage who approve of government management. Our problem there is of pure misery: no source can provide us with such data with a frequency which may appear -even remotely- as quarterly. The CIS is again the best source, but -in addition to the alluded problem of frequency- their question wording has varied five times during the period.

In some sense, our variable is more demanding than others' are. In fact, if governments bother about their popularity is -in addition to the human tendency to be liked- because it may generate vote in the long run. Therefore, modelling vote intention instead of popularity we make a further step in the causal chain, and so take a more demanding -and not a more comfortable- stance.

Our independent variables are the following:

Unemployment is measured as the percentage of unemployed over the active population and is provided by the OECD. *Inflation* is measured by the official rate of inflation provided by the Spanish Institute of Statistics (INE). We took the *general* index in its *interannual* version. Given that the official data on inflation appears monthly, it has been averaged into quarterly data.

Following conventional practice, the rates of unemployment and inflation have been differenced up to the point of making it stationary. In both cases, this meant differencing them twice. Therefore, the regression coefficients generated by -e.g.- the variable unemployment should be interpreted as the increase in popularity produced by a marginal increase in the *acceleration of the rate* of unemployment. Notice that it should not be interpreted as the increase in popularity produced by a marginal increase in

the *rate* of unemployment, and not even by a marginal increase in the *growth of the rate* of unemployment. The same applies to inflation.

Other macroeconomic variables have been used in the estimation of the model, but they did not prove any statistically significant influence over government popularity. See section 6 for an account of them.

General Economic Expectations are measured by the answers to a survey question on the economic situation expected for the country the following year. It is provided by the economic series of the EU, which weight the answers as follows: much better, +1; better, +½; about the same, 0; worse, -½; and much worse, -1. This weighting is also controversial, but it is originally provided by the EU, so this rules out any alternative arrangement. Given that the data appear monthly, it has been averaged into quarterly data. Data on Spain are not available from the EU for the period previous to 1986, so for the period 1985-1986 we took functional equivalents from CIS surveys. The absence of data for the period 1983-1984 has the effect of effectively reducing the period of estimation. The CIS series was monotonously transformed so as to make it fluctuate at the same level than the main EU series. The linear monotonous transformation was established regressing the CIS series over the main EU series.

Other variables on the perception of the economy have been used in the estimation of the model but -although they were statistically significant taken in isolation- they could not outweigh the influence of the *General Economic Expectations* and were consequently discarded. See section 6 for an account of this process.

Leadership attempts to measure the charisma of the president *Felipe González*. Data are taken from CIS surveys, which ask to place political leaders on a scale from 0 to 10. The CIS provides the average evaluation for each leader at every time point, and our leadership variable computes the difference between the average evaluation of *Felipe González* minus the average evaluation of the successive leaders of the Conservative Party: *Fraga* up to 1989 and *Aznar* from then onwards.

Both *General Economic Expectations* and *Leadership* were differenced once to make them stationary. This means that the regression coefficients generated by -e.g.- general economic expectations should be interpreted as the increase in popularity produced by a marginal increase in the *growth* of general economic expectations (i.e., not by a marginal increase in general economic expectations themselves). The same applies to leadership.

Our method of model building was largely that of the Hendry methodology. It basically consists on trying to estimate the model by throwing in all the independent variables which may conceivably influence the dependent variable, and with all the lags which may appear reasonable. As may be expected, this brings about a model in which most of the regression coefficients are not statistically significant. Accordingly, the independent variables associated with those coefficients are excluded from the model and the new shorter model is re-estimated. This may need some reiteration if any of the new coefficients become now not significant.

In addition to this method, we devised a complementary routine that followed a *variable by variable* basis. Each of the previous independent variables, once repeatedly lagged, was used as a single estimator of the dependent variable. This generated a list of variables and lags that showed an autonomous influence. As may be expected, these were more or less the same variables that were present in the final model generated by the previous method. However, the few variables which were in this list but not in the previous model, were then reintroduced in that model: its statistical significance was then rechecked to confirm or reject the solidity of its influence. As we will show in section 6 (on the discarded variables), this routine did not change the model, but it was useful in reassuring us that our model was well specified and no presumably influencing variables were missing from it.

2. RESULTS

According to this method of estimation, the final model of popularity for the Spanish government is showed in table 1.

We shall interpret these results step by step: first of all, the economic component; secondly, the structure component; thirdly, the political component; and finally, we shall discuss the results brought about by the discarded variables.

3. RESULTS FOR THE ECONOMIC COMPONENT

Table 1 shows that unemployment has an impact on the vote intention for the governmental party: it decreases more than two and a half percent for each marginal increase in the *acceleration of the rate* of unemployment. On the other hand, each marginal increase in the *acceleration of the rate* of inflation decreases vote intention by two thirds of a point. The fact that what counts are not the *rates* -not even the *growth of the rates*- but the *acceleration of the rates*, suggests that Spanish voters became easily used to economic circumstances. For instance, even in a context of falling unemployment, the government was punished if rates suddenly did not fall as fast as previously.

The statistical significance of the coefficients reaches levels of confidence of 98% and 96%, which -being more than acceptable- suggest the existence of small problems in the relationship, as will be showed later. The lags with which these variables operate are also remarkable. Unemployment lasts three quarters until it is transformed into vote intention, and inflation lasts two. This seems perfectly comparable to what we know from other countries.

Even knowing that these relationships between government popularity (however measured) and unemployment or inflation are often found, we cannot avoid a sense of astonishment. How can Spaniards react to macroeconomic data when we know their limited macroeconomic erudition (nothing personal against Spaniards in particular: their limited macroeconomic erudition is something they have in common with the rest of humankind!). Or in others words, did really Spaniards punish the socialist government *because* they knew the macro-economy was getting worse? As Professor Sanders indicates in his paper to this conference, the answer to this question seems to be that voters do not really need to have a great

economic erudition in order to perceive the general flavour of economic conditions. Our data on the stability of the coefficients -to which we turn now- will bring some backing to this.

How stable is this relationship between vote intention on the one side and unemployment and inflation on the other? Or in other words, did vote intention fall 2.59% for each marginal increase in the acceleration of the rate of unemployment *during the whole period of study*? Or did it fall deeper at some moments? We have performed two types of analyses with this question in mind: recursive regressions and rolling regressions. Recursive regression involves basically estimating the whole model with successive periods of estimation which grow longer in each estimation. For instance, we first estimated the model just for the period 1985-1987, then re-estimated it with one more time point, and so on. This means that each estimation lengthens the period one quarter longer until it estimates the whole model we showed in table 1. The worth of this analysis is that we can see the stability of the coefficient by simply following the values that the coefficient takes in its way to the final value. Figures 1 and 2 show the recursive regression for the coefficients of unemployment and inflation.

On the other hand, rolling regression involves successively re-estimating the model for established periods of, say, twenty-five time points. We first estimate the model for the first twenty-five time points. Then, the first time point of the period is eliminated from the estimation period and, in its place, a later time point joins the estimation period. This analysis also produces successive re-estimations of the model, but the estimation period includes always the same quantity of time-points. This analysis also displays the stability of the coefficients by showing the successive coefficients in consecutive re-estimations. Figures 4 and 5 show the rolling regression for the coefficients of unemployment and inflation.

Figures 1 and 3 reveal that unemployment becomes less and less influencing over the vote intention of Spaniards. In fact, it once used to produce a fall in vote intention of almost 4%. However, it reduces its impact to less than 3% during the beginning of the 1990s. And around 1994, the coefficient drops to such a level that the standard error band crosses the zero level, thus indicating problems of statistical significance. In short, unemployment was largely consequential in the 1980s, but gradually lost its electoral impact during the 1990s.

On the other hand, figures 2 and 4 reveal the contrary effect regarding inflation. At the beginning of the estimation period, inflation displayed an effect of a dubious statistical significance over the vote intention of the Spaniards. The 1990s mean a fall of the coefficient down to almost -1, and so a certain improvement of its statistical significance. This became a clear effect over vote intention around 1992 or 1993, reaching values well beneath -1.

The problems of statistical significance observed concerning table 1 could well be a consequence of these instabilities of the coefficients: the levels of confidence of 98% and 96% seem to be just an average between two periods of different statistical significance.

Turning to substantive questions, the interpretation of the instability has to take into account the change in the economic agenda that took place during the period. The 1980s had awaked with a socialist government being elected, members of the Unions sat in the cabinet for the first time in many decades and

-with the highest rate of unemployment in Europe- unemployment was high in the political agenda. This had to change with the passage of time. The entry in the EC and the initiation of the Single Market in 1986 mean the arising of a change of economic priorities. From then to its completion in 1992, inflation started to be seen as a key economic issue. That year witnessed the signing of the Maastricht Treaty and, with it, the confirmation of inflation as *the issue* and the relegation of unemployment to a subordinate position in the economic agenda. This was clear in the agenda of the elites, but the instability of the function seems to point to the fact that this turned clearly into the agenda of the citizens.

A collateral upshot of this instability refers to the above alluded possibility that citizens grasp the general flavour of economic conditions. We think to have revealed that Spaniards were exposed to a shift in the priorities of their economic agenda. If this were so, it would mean that citizens *actually have* an economic agenda - however vague this may be. And this could suggest some backing to the idea that voters actually perceive the general flavour of economic conditions.

Table 1 also displays a third variable in its economic component: *General Economic Expectations*. Each marginal increase in the growth of expectations brought about an increase of 0.16 points in vote intention. This coefficient did not show problems of instability in the recursive and the rolling regressions. With a level of confidence of 99%, it does not display problems of statistical significance either.

The question here is one of locating our function in the international debate over popularity functions. The fact that *general* expectations outweighed the influence of personal expectations would easily locate us in the sociotropic side of the gang, whereas the fact that general *expectations* outweighed the influence of general retrospections would locate us in the prospective side of it. Although we recognise the theoretical appeal of the questions contended in those debates, we tend to think that being one or another the variable which succeeds the tests may be an accidental question. For instance, our data for the four variables do not cover *exactly* the same periods, which could largely bias the relative success of the variables.

4. RESULTS FOR THE STRUCTURE COMPONENT

Following conventional practice, we included the lagged dependent variable as an independent variable. This specification assumes that the vote intention at a certain point in time partially depends on the vote intention that the government enjoyed at the previous time point. Therefore, the coefficient for these variables will be interpretable as the percentage of its vote intention which the government keeps for the following period -a sort of *baseline* share of the vote over which the rest of the variables will exercise its influence to make it grow larger or drop deeper. Given this interpretation of the coefficient, it is often called *discount rate*. In fact, it is the speed at which the mere passage of time erodes the vote intention of an initial period. Given that *eroding speed* would sound much closer to geology rather than to politics, *discount rate* sounds more acceptable.

This specification seemed to us a sensible assumption, and it turned to be empirically accurate too. As table 1 indicates, the socialist government happened to keep 96% of its vote intention for the

following period. Taking into account that we use quarterly data this is a huge discount rate, higher than any other mentioned in the literature. Does this mean that Spaniards keep government popularity (or unpopularity) for a long time regardless of contemporary circumstances? Or put it as experts do, does this mean that Spaniards are particularly far-sighted? Well, yes and no. The analyses of stability displayed in figures 5 and 6 show that they are only far-sighted during the last period under scrutiny, but that this is enough to increase exaggeratedly the overall estimation of the discount rate.

Figure 5 shows that the discount rate is considerably stable up to 1993. It barely fluctuates around 0.55, which is a perfectly standard quarterly discount rate². However, 1993 begins a jump in the discount rate, firstly to 0.7 and, from 1994, up to almost unity. This pattern suggests that Spaniards were as shortsighted as almost any other European electorate up to 1993, and then something extraordinary messed it all.

Any expert on Spanish politics will agree that the period 1993-1995 is clearly extraordinary. An extremely fierce media campaign against the socialist government was arranged just the day after the surprising 1993 election results: news of scandals were every day on the headlines, personal offences became increasingly distasteful and, in short, electors were reminded every day of the evils of the whole of the socialist mandate. The campaign finally achieved the electoral defeat of the socialist government in March 1996. However, the data suggest that it achieved something else: it induced Spaniards to increase their discount rate by making them remember past conditions for a much longer time. In fact, the discount rate close to one would suggest that the campaign made Spaniards remember past conditions *ceaselessly*.

Therefore, we think that this jump in the discount rate should not be seen as an anomaly in the function, but precisely as the confirmation of its capacity to capture shifts in the political atmosphere.

The second element in the structure component is the constant of the equation. If estimated through a standard regression, this constant would tell us that the socialist government has a guaranteed minimum share of the vote of 1.7%. However, some methodological peculiarities preclude this interpretation. The inclusion of the lagged dependent variable means that, in every time point, the estimation of the vote intention already starts from a positive and relatively high value -a value which is equivalent to the vote intention of the previous time point multiplied by the discount rate. This element already provides a baseline (a guaranteed minimum share of the vote) and thus the presence of the constant becomes, to some extent, redundant. The inclusion of the lagged dependent variable also means that we are not estimating vote intention for the government, but we are actually estimating the *variations* in vote intention, which greatly reduces the need for a constant. In short, given the specification of the model, it is no wonder the constant of the model shows serious problems of statistical significance.

5. RESULTS FOR THE POLITICAL COMPONENT

If the model was to be estimated only with the two components spelled out so far, the regression would produce predicted values for vote intention that would grossly differ from actual values in three specific time points. Figure 7 displays the difference between predicted and actual values (i.e., the residuals) of such a model.

It is clear from this figure that something exceptional happened in the fourth quarter of 1985, when the actual vote intention was more than six points above the predicted value. Something happened too in the third quarter of 1990, with a deviation of eight points. And there is also something peculiar with the prediction of the fourth quarter of 1993 and the first quarter of 1994, when the actual values run invariably lower than their predictions.

It is not really necessary going to the newspaper library to guess the reason of the extraordinary popularity of the government in the surveys of the fourth quarter of 1985. It had just been signed the entry in the EC and this was seen as a historical achievement. Thus, it is normal that citizens rewarded the government with a higher vote intention, just in the same way that citizens tend to reward, for instance, reductions of unemployment. According to usual practice, we introduced this event in the equation by modelling it as a dummy variable. It took value 1 in the fourth quarter of 1985 and value 0 during the rest of the estimation period. Therefore, the coefficient for the dummy variable *European Community* assesses the sudden jump in vote intention which the government obtained from this event: the signing of the Lisbon Treaty would yield a 6.59% vote to the Socialist Party if the elections would have been held immediately after. This effect decayed at a discount rate of 0.55, which means that at the time of the general election of 1986, it contributed with about 2.4 points to the socialist victory. The EC effect kept decaying unceasingly and, by the end of 1986, it became imperceptible (i.e., lower than 1%).

Accounting for the sudden jump of the third quarter of 1990 is more difficult. In that quarter the Gulf War took place. When a dummy variable is introduced in the model it clearly shows that the war increased the vote intention of the government by 6.56%. If this were Britain or the US, we would readily accept that the active stance that the government took in the war (use of military airfields, participation of the Navy, etc.) could increase the popularity of the government. But we are analysing Spain, and Spaniards did not cherish the war -not even a bit. And even when data suggested us so, we did not believe it. The solution of the puzzle starts with the confirmation that, even if the residuals display an extraordinary peak in that quarter, the peak of the actual vote intention is more moderate. In fact, the unusually high residuals are mainly generated by a slump in the predicted vote intention. And this slump is derived from a slump in general economic expectations. So the story seems to go as follows. The war produced a sudden fall in general economic expectations. In normal circumstances, this would produce a fall in vote intention, but the fall did not happen (probably because citizens did not blame the government for the bad news) and vote intention remained stable or increased a bit. This unexpected stability generated a disadjustment between actual and predicted values. Therefore, the dummy we labelled *Kuwait* only means that we do not have any other statistical means for accounting for the residual. In short, the war did not greatly increase the vote intention for the government, but it did not decrease it either -even when it could have done it by a 6.56%.

The effect of Kuwait decayed at a discount rate of 0.55, which means that it became imperceptible by the third quarter of 1991. Given that there were no elections held until 1993, Kuwait did not contribute to any election results.

We introduced the last dummy in the model to account for the noticeable negative residuals in the fourth quarter of 1993 and the first quarter of 1994. During that period, a great scandal of irregular

financing shaken the Socialist Party, becoming the more notorious episode of corruption in recent Spanish history. It was known as the *Filesa* scandal, after the name of one of the phoney companies that diverted irregular funds to the Socialist Party. The length this dummy should have is a controversial matter. In fact, Filesa was a series of consecutive scandals that kept appearing during several months, so any specification ranging from a length of one quarter to three quarters could be justifiable. In such circumstances, we took an experimental view: we used the one that produced better statistical estimates. And this was giving a value of one to the fourth quarter of 1993 and the first quarter of 1994, and a value of zero to the rest of the estimation period.

With such a specification, the coefficient for the dummy variable *Filesa* assesses the quarterly electoral cost of the Filesa scandal. In the fourth quarter of 1993, this cost was 4.13%, whereas in the first quarter of 1994 the cost was 4.13% plus the decayed cost of the previous quarter (i.e.: $4.13\% + (4.13\% \cdot 0.955) = 8.074\%$). At the moment of highest electoral cost, in the first quarter of 1994, the government was being punished with eight points. Given that the discount rate in that period was already around unity, this cost was almost entirely transferred to the next general election of March 1996. Even as late as that, Filesa still costed 5.57 points to the socialist government. This means the socialists lost 1,381,684 votes due to Filesa, showing it was probably the worst *business* in the history of the Socialist Party.

The last variable we introduced in the model was *leadership*. As stated in section 1, this attempts to measure the charisma of *Felipe González* compared to the successive leaders of the Conservative Party. We have serious doubts about any explanation of government popularity that takes, as explanatory variable, the popularity of the Prime Minister. In fact, we thought the explanation could be somewhat tautological, so we did not introduce the leadership variable until the whole model was estimated, re-estimated, and polished. And we introduced it with the serious conviction that if this variable had the effect of rendering astray any part of the previously estimated model, we would keep the previous one.

However, the results were surprising and the model stood remarkably well. The levels of significance did not deteriorate at all and the coefficients did not vary greatly. Thus, we decided to keep this additional variable. The coefficient for leadership suggests that vote intention for the government increased a 2.78% for each marginal increase in the growth of the distance between the two leaders. This confirms to some extent a widespread idea in Spanish politics. The great length of the socialist government was only possible due to the great difference in charisma between Felipe González and the successive leaders of the opposition. Only when the Conservative Party promoted an electable leader, the shift in government was possible. However, this just receives limited backing. In terms of significance, this is the second worst variable. So, other effects were of a clearly higher importance than leadership to account for socialist vote intention.

6. THE DISCARDED VARIABLES

Other macroeconomic variables have been used in the estimation of the model but did not prove any statistically significant influence over vote intention. These were *Gross National Product* (measured interannually, both in nominal and real magnitudes, and provided by the INE) and *Private Consumption*

(also provided by the INE). Conversely, some macroeconomic variables actually displayed some influence over vote intention, but were not introduced in the model due to different problems. These were *Interest Rates* (standard three month rates, both in nominal and real magnitudes, provided by the Spanish Central Bank), *Exchange Rate* (nominal effective rate of the *peseta* against EU member states, also provided by the Spanish Central Bank), *Income Tax* (amount of taxes effectively collected per capita, provided by the INE), and *Value Added Tax* (diverse specifications of rate of VAT, establishment of VAT, etc.).

Both *Value Added Tax* and *Income Tax* displayed some nice negative influence over vote intention when taken isolatedly, but the statistical significance of these influences disappeared clearly when introduced in the whole model.

On the other hand, *Exchange Rate* proved some influence both when introduced isolatedly and when introduced in the whole model. In this case, the coefficient was a positive 0.35 and its significance a not very good 0.067. However, the real problem was that, when introducing the exchange rate, the tests for autocorrelation and heteroskedasticity began to fail obstinately. Therefore, our decision was to avoid this variable.

The case of *Real Interest rates* is an interesting one. When taken unlagged, it displays significant influence over vote intention only if accompanied by some lags of itself. The problem is that the accompanying lagged variables are completely non-significant. And when these are discarded, then, the unlagged variable completely loses its statistical significance. In any case, it does not show great results either when -instead of assessed isolatedly- is thrown into the whole model. Then, the coefficient is -0.6, and the significance is a nice .015, but the tests for serial correlation fail dramatically and the discount rate climbs up to unity. In these circumstances, we also decided to leave this variable aside.

Turning to subjective measures of the economy, the retrospective variables did not show any significant relationship with vote intention, but prospective did. In particular, personal expectations -once differenced and lagged three periods- displays a relationship with a statistical significance of 0.031. The problem there is that this variable was outweighed by general expectations when joined the whole model. The same happened to an interesting index provided by the Ministry of Economy, which assemble together different survey measures of confidence in the evolution of the economy.

Table 1

Vote Intention for the Socialist Party, 1985-1996

	Coefficient	Significance
Structure Component		
Vote intention $t-1$	0.955	.000
Constant	1.71	.423
Economic Component		
Unemployment $t-3$	-2.59	.013
Inflation $t-2$	-0.63	.036
General Economic Expectations $t-1$	0.16	.010
Political Component		
Leadership	2.78	.019
European Community	6.59	.006
Kuwait	6.56	.007
Filesa	-4.13	.004

The model succeeds standard tests for serial correlation, functional form, normality and heteroskedasticity. Adjusted $R^2=0.93$, Durbin-Watson statistic=2.38.

Figure 1

Recursive regression. Unemployment coefficients

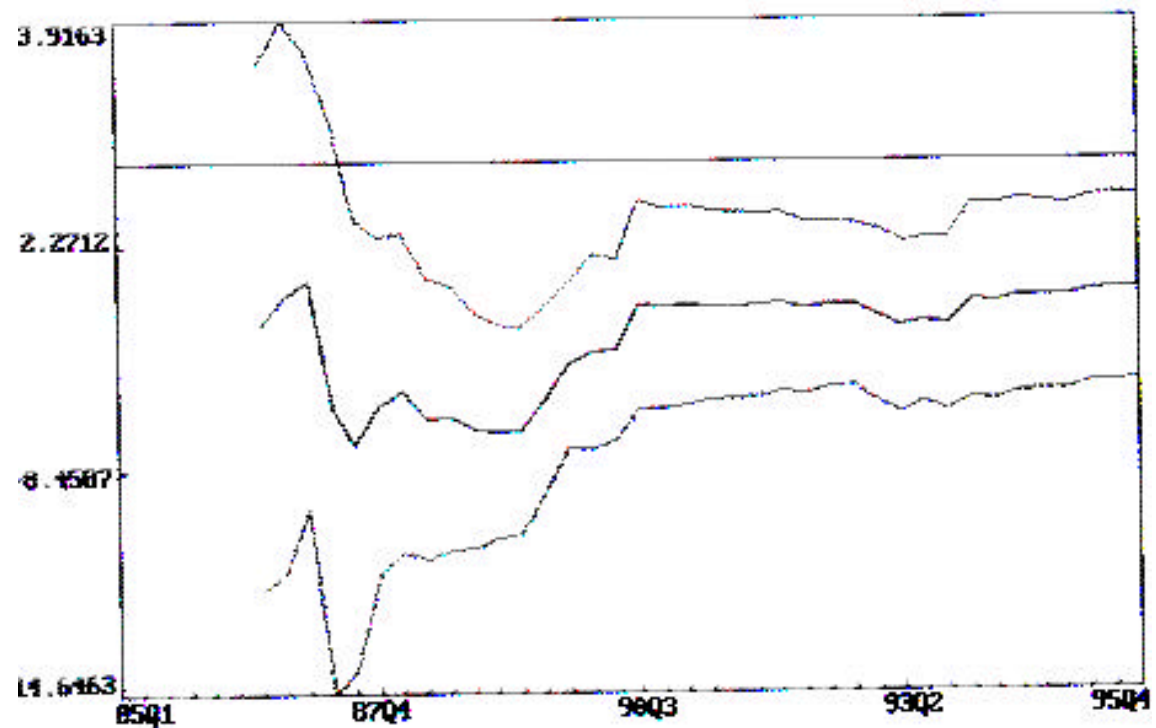


Figure 2
Recursive regression. Inflation coefficients

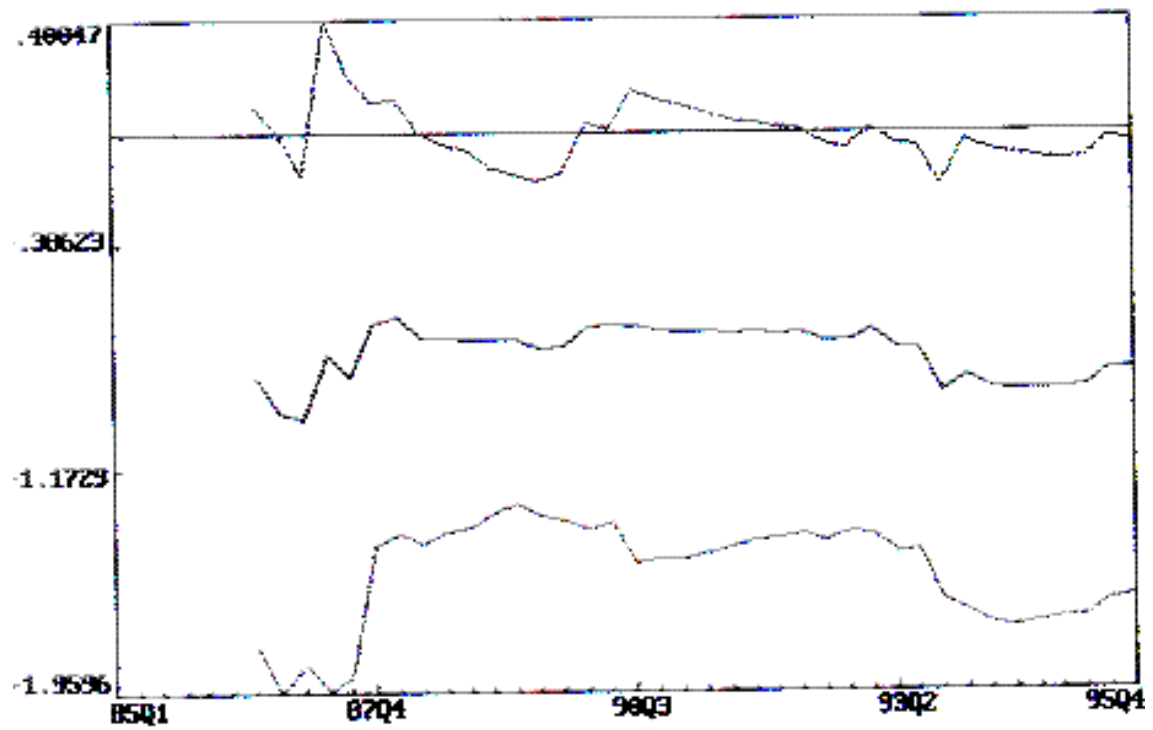


Figure 3
Rolling regression. Unemployment coefficients

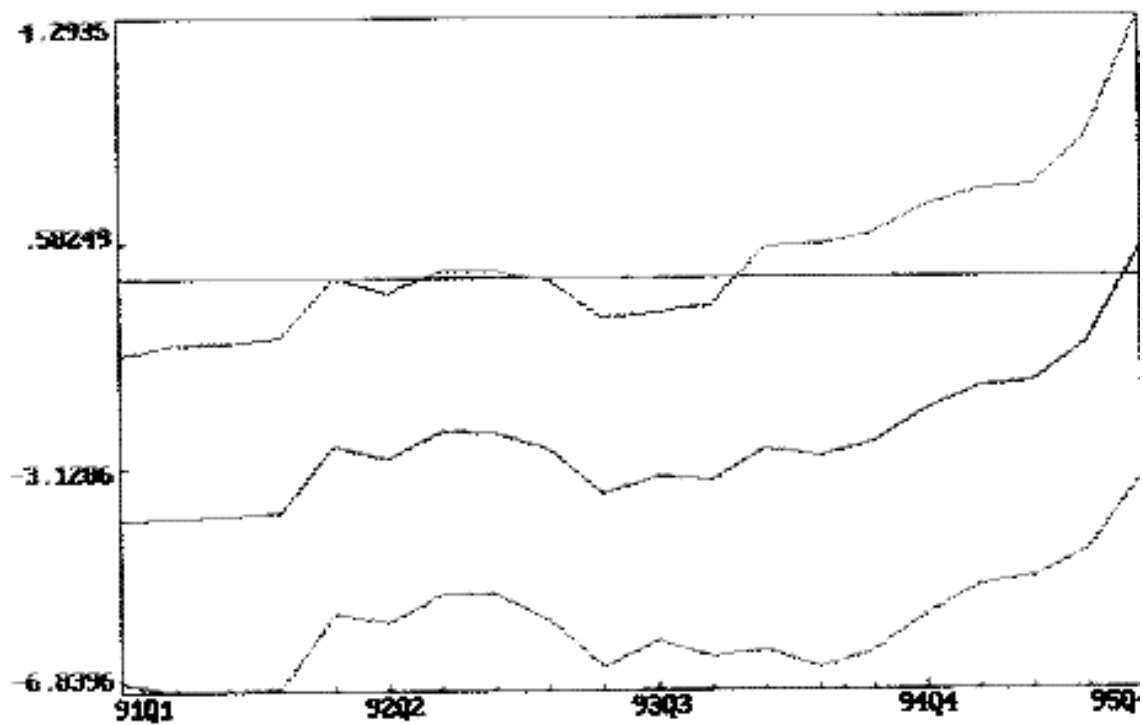


Figure 4
Rolling regression. Inflation coefficients

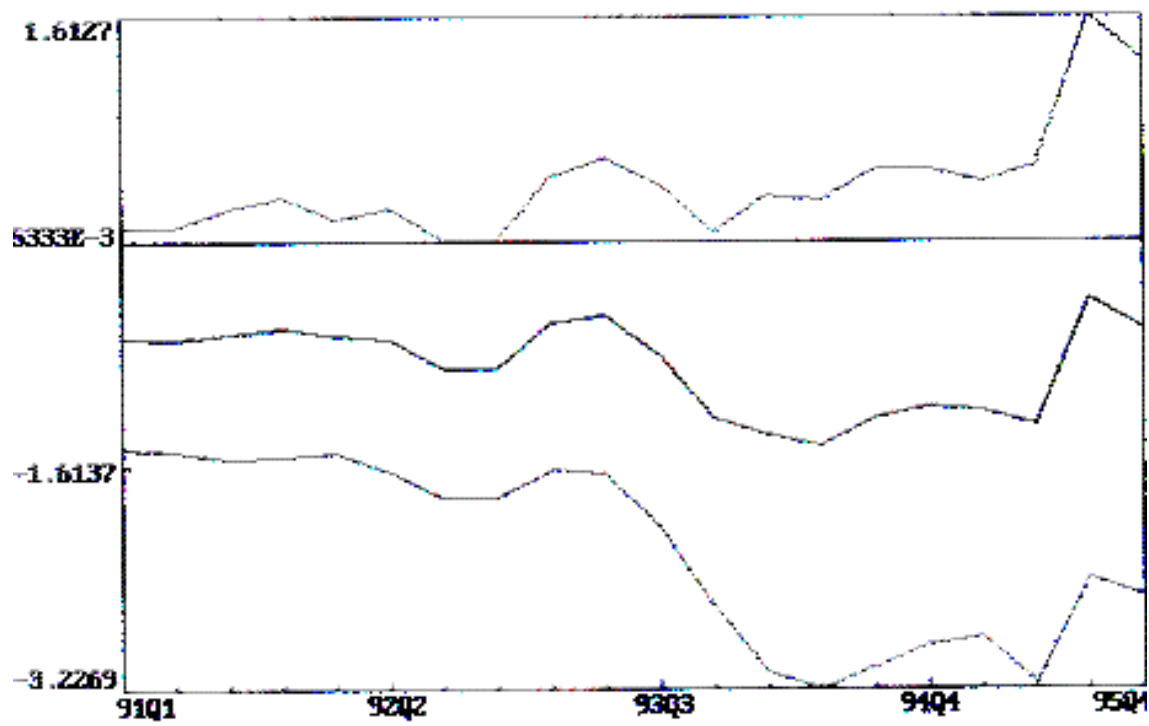


Figure 5
Recursive regression. Discount rate coefficients

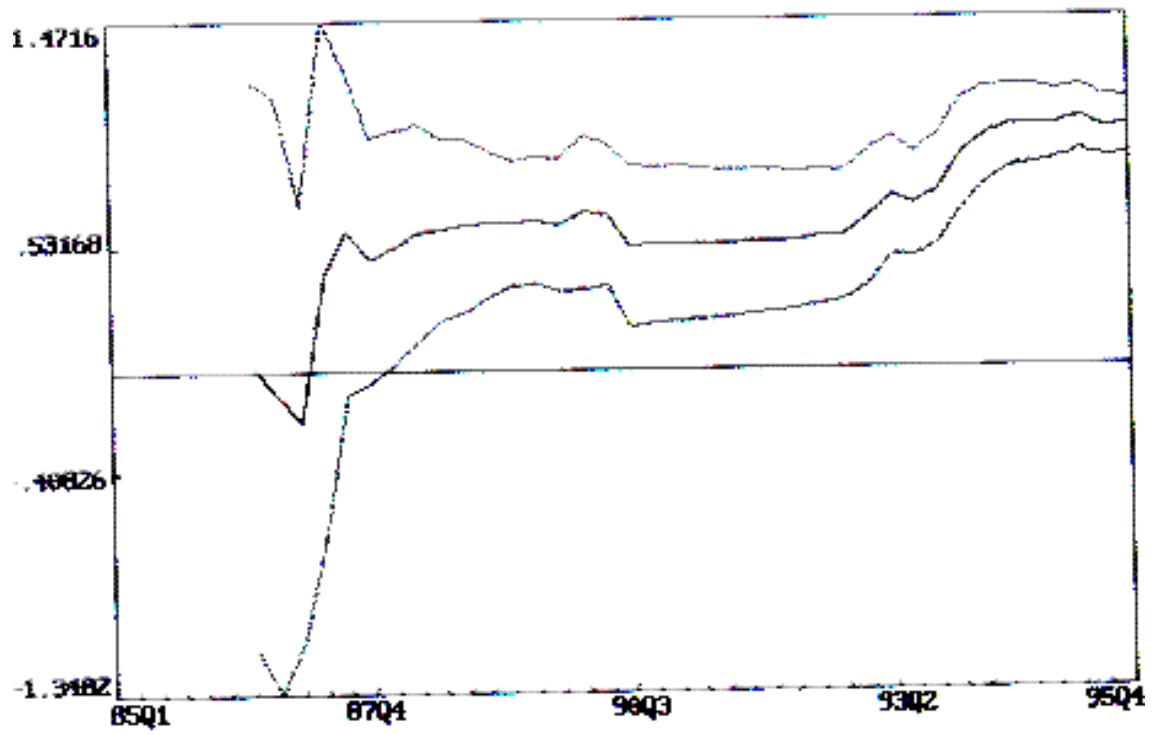


Figure 6
Rolling regression. Discount rate coefficients

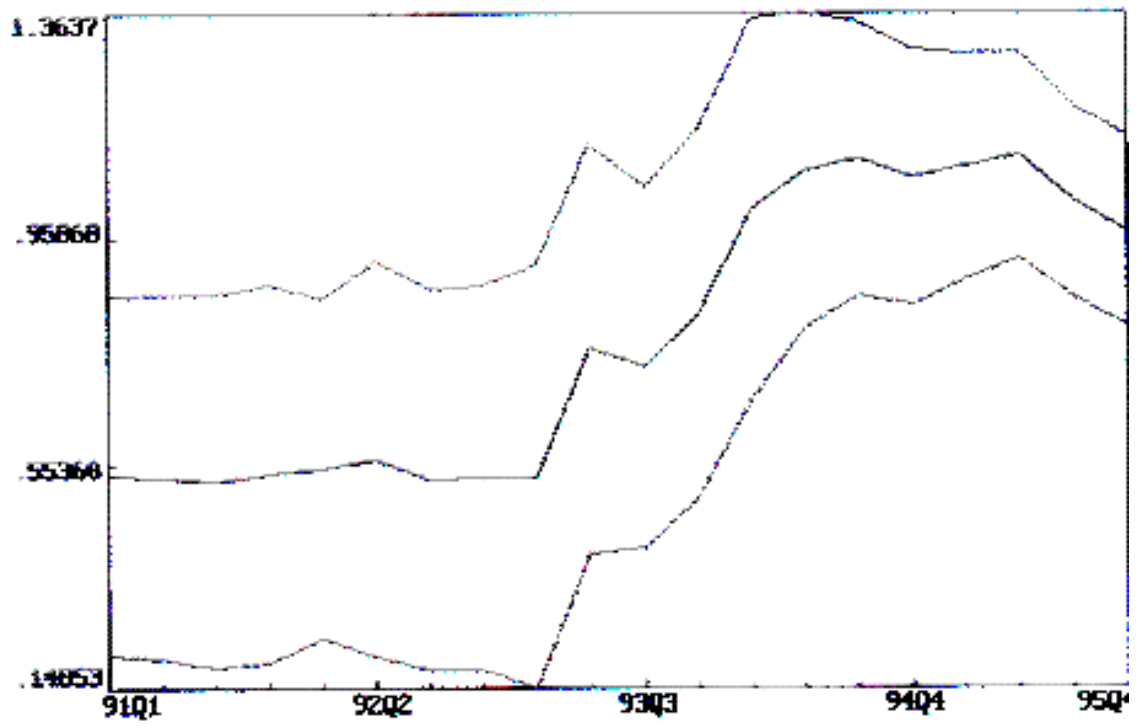
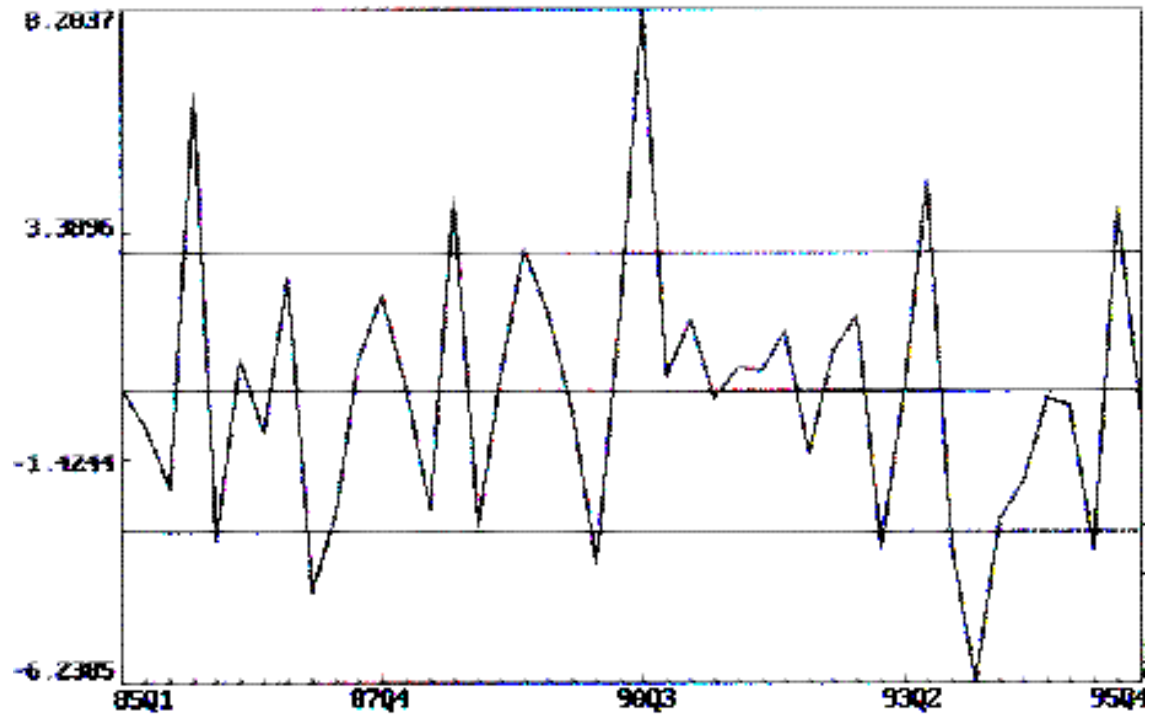


Figure 7
Model residuals without dummy variables



NOTES

This paper has been written in the context of a research project funded by the ICPS and the CICYT

1. All data used in this study are freely available to researchers. Requests may be directed to the Institut de Ciències Polítiques i Socials, or directly to the authors.
2. The small sudden jump around the third quarter of 1990 is merely due to a technicality. Given that these tests do not allow the presence of dummy variables, we had to temporarily exclude a dummy placed in that period (see section 5) and so the discount rate seems to suffer this absence by absorbing the effect of that dummy variable.